



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/666,052

09/17/2003

William H. Pettit

8540G-00004CPB

6585

27572 7590 02/12/2007
HARNESSE, DICKEY & PIERCE, P.L.C.
P.O. BOX 828
BLOOMFIELD HILLS, MI 48303

EXAMINER

KALAFUT, STEPHEN J

ART UNIT

PAPER NUMBER

1745

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
--	-----------	---------------

3 MONTHS

02/12/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/666,052	Applicant(s) PETTIT ET AL.	
	Examiner Stephen J. Kalafut	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 November 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,5-28,30-35,37-41 and 46-51 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-28,30-35,37-41 and 45-51 is/are allowed.
- 6) ☒ Claim(s) 1,10 and 507 is/are rejected.
- 7) ☒ Claim(s) 8 and 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Art Unit: 1745

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1, 5 and 10 are rejected under 35 U.S.C. 102(b), or under 35 U.S.C. 102(a) and (e) as being anticipated by Dybkjær (US 6,224,789), for reasons of record.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dybkjær in view of Yamaoka *et al.* (US 6,630,109).

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dybkjær in view of Singh *et al.* (US 5,523,483).

Claims 8 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant's arguments have been found persuasive with regards to these claims.

Claims 11-28, 30-35, 37-41 and 45-51 are allowed. The amendments to these claims have obviated the previous rejections.

Applicant's arguments filed 27 November 2006 have been fully considered but they are not persuasive.

Art Unit: 1745

Applicants argue that the two reactors disclosed by Dybkjær operate at the same pressure, which is 40 bar, as shown in the Example. This is not persuasive because this is only the pressure of the streams as they initially enter the respective reactors. While both streams start at 550 °C (column 2, lines 35 and 44), the temperature in the reactors is different. Gas exits the ATR at 1000 °C, and from the steam reformer at 928 °C (column 2, lines 43 and 52). Since gas temperature has an effect on pressure, the temperature difference would produce a pressure difference. The ATR contains a mixer burner (column 2, lines 39-40), while the steam reformer contains 100 parallel tubes (column 2, lines 45-46). This difference in internal structure would also produce a pressure difference. Dybkjær teach that the “pressure difference” between the tubes of the steam reformed should be minimized (column 1, lines 27). This would itself indicate that the tubular structure has an effect on pressure.

Applicants argue that there is no necessarily inherent relationship between the two reformers and their response times. This is persuasive for claim 9, which recites that second reactor, which is the steam reformer of claim 1, has a higher response time than the first reactor, which is the ATR of claim 1. However, claim 10 only requires that the two response times be different. Either response time may be greater than the other. Since the reactions (one which involves a feed of oxygen, while the other does not), temperatures, and internal structures of the two reactors of Dybkjær are different, as stated above, their response times would also differ. The “myriad of mechanizations, operating conditions and configurations” that applicants point out would themselves be evidence that different conditions lead to different response times.

Applicants argue that there is no motivation for using a vaporizer in the system of Dybkjær, because the steam and natural gas are already vaporized, and that the vaporizer of

Art Unit: 1745

Yamaoka *et al.* derives its heat from a combustor, not from the reformat. This is not persuasive because it argues with the references individually. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Dybkjær shows ATR reformat as a heat source, while Yamaoka *et al.* shows heat as being needed for vaporization. While Dybkjær shows a gaseous raw fuel, Yamaoka *et al.* shows that reformation may be performed on raw fuels that are normally liquid as well.

Applicants do not make any arguments specific to claim 7 and Singh *et al.*

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Kalafut whose telephone number is 571-272-1286. The examiner can normally be reached on Mon-Fri 8:00 am-4:30 pm.

Art Unit: 1745

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

sjk

A handwritten signature in black ink, appearing to be 'G. Ryan' or similar, written in a cursive style.

RECEIVED
PATENT EXAMINER
GROUP
1700